

CONT
A4

being selectively removably coupled with each hood along the perimeter sealing edge of the mask and the mask opening on the hood wherein, when so coupled, the hood is superpositioned over the full facepiece seal and a seal is defined between the hood and the mask; and
a breathable gas delivery conduit capable of being fluidly coupled to the mask or the hood.

REMARKS

Claims 1 – 41 are pending in this application. Claims 1 – 41 have been rejected. No claims are currently allowed.

Drawing Amendments

By way of a separate Letter to the Draftsman, Figure 6 has been amended and Figures 8, 9 and 10 have been added. A copy of Figure 6 showing the amendment in red and Figures 8, 9 and 10 are enclosed.

Figure 6 has been amended to add the “microstructure sealing surfaces” identified in claims 16 and 34. Figure 6 has been amended to add “microstructure sealing surfaces” as element 254. Support for this amendment can be found in claims 16 and 34 and in the specification on page 10, lines 15 - 19. Further, microstructure sealing surfaces are well known in the art. No new matter has been added.

Figure 8 has been added to illustrate an “elastic band at least partially extending along an opposed rim portion.” Support for this amendment can be found in claim 15 and in the specification on page 10, line 10. The “elastic band” is illustrated in Figure 8 as element 256. Further, elastic bands are well known in the art. No new matter has been added.

Figure 9 has been added to illustrate a “latch means.” The “latch means” is illustrated in Figure 9 as element 258. Support for this amendment can be found in claim 15 and in the specification on page 10, line 10. Further, latches are well known in the art. No new matter has been added.

Figure 10 has been added to illustrate “a full body respiratory suit” as element 260. Support for this amendment can be found in claim 40 and in the specification on page 5, line 21 – 26. Further, full body respiratory suits are well known in the art. No new matter has been added.

Specification Amendments

The specification has been amended to add brief corresponding references to amendment made to Figure 6 (microstructured sealing surfaces) and the addition of Figure 8 (elastic band), Figure 9 (latch) and Figure 10 (full body respiratory suit).

The specification has been amended on page 9 at line 27 by adding “or a full body respiratory suit 260 (FIG. 10)” in order to make proper reference to new Figure 10 illustrating a full respiratory body suit. Support for this amendment can be found in claim 40 and in the specification on page 5, line 21 – 26. Further, full body respiratory suits are well known in the art. No new matter has been added.

The specification has been amended on page 10 at line 10 by adding “256 (FIG. 8)” in order to make proper reference to elastic band illustrated in new Figure 8. Support for this amendment can be found in claim 15 and in the specification on page 10, line 10. The “elastic band” is illustrated in Figure 8 as element 256. Further, elastic bands are well known in the art. No new matter has been added.

The specification has been amended on page 10 at line 10 by adding “258 (FIG. 9)” in order to make proper reference to the latch illustrated in Figure 9. Support for this amendment can be found in claim 15 and in the specification on page 10, line 10. Further, latches are well known in the art. No new matter has been added.

The specification has been amended on page 10 at line 17 by adding “254” in order to make proper reference to the microstructured sealing surfaces now illustrated in Figure 6. Support for this amendment can be found in claims 16 and 34 and in the specification on page 10, lines 15 - 19. Further, microstructure sealing surfaces are well known in the art. No new matter has been added.

Claim Amendments

Claims 15, 16 and 17 have been amended to provide proper antecedent basis for the phrase “opposed rim portions.” No new matter has been added.

Claims 29 and 38 have been amended to clarify that lens / mask is part of a kit that is interchangeable with body seals / hoods. Support for language can be found throughout the specification, e.g., from page 4, line 25, through page 7, line 29. No new matter has been added.

Objection to the Drawings (Office Action ¶ 1-4)

The drawings have been objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims. Four specific items were identified. The drawings have been amended for some items and the objections are respectfully traversed for other items.

First were the items identified in claim 15, namely “opposite thread members,” an “elastic band at least partially extending along an opposed rim portion” and a “latch means.”

The objection, as it relates to “opposite thread members,” is respectfully traversed. The Examiner’s attention is drawn to Figure 6 where elements 251 are described in the specification as a “plurality of threaded fasteners” (see page 9, line 20) and are illustrated as screw and nut combinations. These screw and nut combinations clearly illustrate a preferred embodiment of the “opposite thread members” recited in claim 15.

Figure 8 and 9 have been added to illustrate an “elastic band at least partially extending along an opposed rim portion” and a “latch means,” respectively. The “elastic band” is illustrated in Figure 8 as element 256. The “latch means” is illustrated in Figure 9 as element 258. Elastic bands and latches are well known in the art and the elastic band and latch illustrated in Figures 8 and 9 are merely representative of ways in which elastic bands and latches could be utilized in accordance with the present invention.

Second were the “microstructure sealing surfaces” identified in claims 16 and 34. Figure 6 has been amended to add “microstructure sealing surfaces” as element 254. Microstructure sealing surfaces are well known in the art and the microstructure sealing surfaces now illustrated in Figure 6 are merely representative of ways in which microstructure sealing surfaces could be utilized in accordance with the present invention.

Third were the “cooperative mechanical engagement surfaces” identified in claims 17 and 35. This objection is respectfully traversed. The Examiner’s attention is again drawn to Figure 6 where cooperating flanges on frame halves 245a and 245b are illustrated with threaded fasteners 251 to secure frame halves 245a and 245b together (see page 9, lines 20-21). The illustrated flanges represent a preferred embodiment of the “cooperative mechanical engagement surfaces.”

Fourth was the “full body respiratory suit” identified in claim 40. Figure 10 has been added to illustrate “a full body respiratory suit” as element 260. Full body respiratory suits are well known in the art and the full body respiratory suit illustrated in Figure 10 is just one that is representative of such a respiratory suit.

With the amendments made to the drawings, and accompanying amendments to the specification, and with the arguments traversing the objections made above, the drawings should be in compliance with 37 CFR § 83(a) and the objections to the drawings should be withdrawn.

Rejections Under 35 USC § 112 (Office Action ¶ 5-9)

Claims 15-17 have been rejected under 35 USC § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 15, 16 and 17 have been amended to cure the rejections.

Claim 15, 16 and 17 have all been rejected for lack of antecedent basis for the phrase “the opposed rim portions,” line 3, line 1 and line 1, respectively. Each of claim 15, 16 and 17 have been amended to add proper antecedent basis for the phrase.

With the amendments made, the rejection of claims 15-17 under 35 USC § 112 should be withdrawn.

Rejections Over Tischer et al & Corsini (Office Action ¶ 11)

Claims 1 – 8, 10 – 15, 17 – 33, 35 – 39 and 41 have been rejected under 35 USC § 103(a) as being unpatentable over Tischer et al in view of Corsini. These rejections are respectfully traversed.

Cited Art

Tischer et al discloses a firefighting hood and face mask assembly. The hood disclosed by Tischer et al is made of a knitted or woven heat and flame resistant aramid material (column 4, lines 3 – 11). A face mask 26 includes a face plate 54 secured to hood at a plurality of fasteners 62, spaced at intervals along the perimeter of face mask 26 (Figures 3, 12, 13, 17, 21 and 22). Secured at each of these fastening locations to face mask 26 are [face] seal member (for example, 58 in Figures 4 – 11) and hood 24, consisting of inner and outer layers 50, 52. This provides the basic securing structure disclosed in Tischer et al.

First, note that neither seal member 58 nor hood 24, 50, 52 are secured to face mask 26 at locations around the perimeter of face mask 26 that are intermediate to fasteners 62. Thus, the locations around the perimeter of face mask 26 that are intermediate to fasteners are not secured to either seal member 58 or hood 24. Consequently, face mask 26 is not sealed with either sealing member 58 or hood 24. Tischer et al is concerned with mechanically securing face mask 26 with sealing member 58 and hood 24 but does not provide a seal.

Second, note that the firefighting hood and face mask assembly disclosed in Tischer et al is a complete system. The system disclosed in Tischer et al always includes face mask 26 (or an equivalent), [face] sealing member 58 (or an equivalent) and hood 24 (or an equivalent). Thus, the system disclosed in Tischer et al always has a single configuration, although the exact structure of each element varies according to the various embodiments. At no point does Tischer et al show, disclose or suggest

converting face mask 26 for use with different types of body seals nor a kit with interchangeable body seals. Both body seals disclosed in Tischer et al are shown used at all times.

Corsini has been cited merely to show a gas delivery conduit.

Method Claims

With respect to method claims 1 – 8 and 10 – 11, these rejections are respectfully traversed. Independent claims 1 and 11 require a method of converting a respirator mask from a first type of body seal to a second type of body seal or from a full facepiece respirator to a hood respirator. There is nothing in Tischer et al nor Corsini that discloses, shows or suggests any such conversion. In contrast, the firefighting hood and face mask assembly disclosed in Tischer et al shows at all times the face mask coupled to both a sealing member and a hood at the same time. Neither does Corsini disclose, show or suggest such a conversion. The Examiner’s bald assertion that “one of ordinary skill in the art would appreciate that the method steps claimed … would naturally flow disclosed …” simply fails. There is nothing in either Tischer et al or Corsini to suggest such a conversion. It is incumbent upon the Examiner to find art to support the rejected position.

Further, claims 1 and 11 require releasing a seal and forming a seal or sealably affixing. As noted above, the firefighting face mask and hood combination disclosed in Tischer et al are not sealed. Thus, not only does Tischer et al not show the required releasing and forming a seal or sealably affixing in the conversion but Tischer et al does not show a seal between the perimeter sealing edge face the lens and the lens opening as required by claims 1 and 11.

Thus, the rejection of claims 1 and 11 under 35 USC § 103(a) over Tischer et al in view of Corsini is improper and should be withdrawn.

It is noted that the Examiner makes no further comments regarding the rejections of claims 2 – 8 and 10 – 11 beyond those pertinent to independent claims 1 and 11.

Claims 2 – 8 and 10 should also be allowable by being dependent upon allowable independent claim 1 and for the required elements specified in each claim.

Respirator Claims

The rejection of respirator claims 12 – 15 and 17 – 28 are also respectfully traversed.

Independent claims 12 and 21 require “a disengageable coupling between ... the perimeter sealing edge ..., the coupling having a first engaged condition wherein the [lens/mask] is sealably affixed to the shroud ...” [emphasis added].

Again, as noted above, the firefighting face mask and hood combination disclosed in Tischer et al are not sealed. Neither the seal member nor the hood are secured to the face mask at locations around the perimeter of face mask that are intermediate to fasteners 62. Thus, the locations around the perimeter of the face mask that are intermediate to such fasteners are not secured to either seal member 58 or hood 24. Since these elements are not even secured between fasteners 62, these elements can not be sealed. Consequently, face mask 26 is not sealed with either sealing member 58 or hood 24. Tischer et al is concerned with mechanically securing face mask 26 with sealing member 58 and hood 24 but does not provide a seal.

It is significant for the invention claimed in independent claims 12 and 21 that the disengageable coupling provide a seal between elements. “The seal formed between the face shield component and the body seal is at least effective to prevent contaminant intrusion into the interior of the respirator” (page 5, line 32 to page 6, line 2).

Thus, Tischer et al nor Corsini show, disclose nor suggest the sealing claimed in independent claims 12 and 21 and claims 12 and 21 should be allowable.

Claims 13 – 15, 17 – 20 and 22 – 28 all depend from independent claims 12 and 21, should be allowable by being dependent upon allowable claims 12 and 21 and for the required elements specified in each claim.

Kit Claims

The rejection of kit claims 29 – 33, 35 – 39 and 41, with the amendments made to independent claims 29 and 38, are respectfully traversed.

First, as discussed above, Tischer et al does not disclose, show nor suggest a system in which a seal is defined between the body seal / hood and the lens / mask (claims 29 / 38, respectively) as required by independent claims 29 and 38.

Second, there is nothing in Tischer et al to disclose, show or suggest a respirator kit as presently claimed in which a lens or mask may be selectively coupled to a plurality of body seals or hoods. The firefighting hood and face mask assembly disclosed in Tischer et al is a complete system. The system disclosed in Tischer et al always includes face mask 26 (or an equivalent), [face] sealing member 58 (or an equivalent) and hood 24 (or an equivalent). Thus, the system disclosed in Tischer et al always has a single configuration, although the exact structure of each element varies according to the various embodiments. At no point does Tischer et al show, disclose or suggest converting face mask 26 for use with different types of body seals nor a kit with interchangeable body seals. Both body seals disclosed in Tischer et al are shown used at all times. Both independent claims 29 and 38 now require that the lens / mask be interchangeable with a body seal / hood. This helps distinguish the system disclosed in Tischer et al in which both body seals are present at once.

Thus, neither Tischer et al nor Corsini show, disclose nor suggest the sealing nor the interchangeability claimed in independent claims 29 and 38 and claims 29 and 38 should be allowable.

Claims 30 – 33, 35 – 37, 39 and 41 all depend from independent claims 29 and 38, should be allowable by being dependent upon allowable claims 29 and 38 and for the required elements specified in each claim.

Summary

Thus, with the arguments presented and, in some cases, with the amendments made, the rejection of claims 1 – 8, 10 – 15, 17 – 33, 35 – 39 and 41 under 35 USC §

103(a) as being unpatentable over Tischer et al in view of Corsini are improper and should be withdrawn. Claims 1 – 8, 10 – 15, 17 – 33, 35 – 39 and 41 should be allowable.

Rejections Over Tischer et al, Corsini & Reeves (Office Action ¶ 12)

Claims 9, 16 and 34 have been rejected under 35 USC § 103(a) as being unpatentable over Tischer et al in view of Corsini and further in view of Reeves. With the amendments made to claim 29 and the arguments presented, these rejections are respectfully traversed.

Tischer et al and Corsini have been discussed above.

Reeves has been cited only for the use of microstructured surfaces and does not affect the arguments made above with respect to the independent claims present in this application.

Claim 9, ultimately depending on allowable independent claim 1, and claim 16, depending on allowable independent claim 12, should now be allowable by being dependent upon an allowable claim and for the required elements specified in each claim.

Claim 34, ultimately depending on allowable independent claim 29, should now be allowable by being dependent upon an allowable claim and for the required element specified in the claim.

Thus, the rejections of claims 9, 16 and 34 under 35 USC § 103(a) over Tischer et al in view of Corsini and further in view of Reeves are improper and should be withdrawn. Claims 9, 16 and 34 should be allowable.

Rejections Over Tischer et al, Corsini & Motsinger (Office Action ¶ 13)

Claim 40 has been rejected under 35 USC § 103(a) as being unpatentable over Tischer et al in view of Corsini and further in view of Motsinger. With the amendments made to claim 38 and the arguments presented, these rejections are respectfully traversed.

Tischer et al and Corsini have been discussed above.

Motsinger has been cited only for the use of a full body suit and does not affect the arguments made above with respect to the independent claims present in this application.

Claim 40, depending on allowable independent claim 38, should now be allowable by being dependent upon an allowable claim and for the required element specified in the claim.

Thus, the rejection of claim 40 under 35 USC § 103(a) over Tischer et al in view of Corsini and further in view of Motsinger is improper and should be withdrawn. Claim 40 should be allowable.

Summary

With the amendments made and the arguments presented, claims 1 – 41 should be allowable, this application should be in condition for allowance and a notice to that effect is earnestly solicited.

Respectfully submitted on behalf of
3M Innovative Properties Company



William D. Bauer
Registration No: 28,052
612-331-7405 (telephone)
612-331-7401 (facsimile)
Customer No. 23322



December 12, 2002

IPLM Group, P.A.
P.O. Box 18455
Minneapolis, MN 55418

All correspondence regarding this application should be directed to:

Karl G. Hanson
Office of Intellectual Property Counsel
3M Innovative Properties Company
P.O. Box 33427
St. Paul, Minnesota 55133-3427
Telephone: (651) 736-7776
Facsimile: (651) 736-3833

Version With Markings to Show Changes Made IN THE SPECIFICATION

1. Second full paragraph on page 9:

As shown in FIG. 6, in Group III embodiments the common component 242 comprises a facial lens 244 coupled with a full facepiece seal 246. A user can further couple a hood 248 with the lens 244 without having to remove the full facepiece seal 246. This is accomplished by superpositioning the hood 248 over the full facepiece seal 246. The result is a respirator 250 comprising a hood 248 fitted with a full facepiece seal 246 as shown in FIG. 7. This superpositioning of a hood over and a full facepiece seal can be done in several different ways as described above. In one preferred embodiment, for example, the full facepiece seal 246 is preferably coupled to the lens 244 using a lens coupling frame 245 comprising two halves 245a and 245b fitted around the lens 244 along a perimeter edge 249 of the lens 244. A plurality of threaded fasteners 251 can be used to secure the coupling frame halves 245a and 245b together. When desired, the coupling frame 245 may be removed, the hood 248 is superpositioned over the full facepiece seal 246, and the coupling frame 245 is replaced and tightened again to secure both the hood 248 and the full facepiece seal 246 along the perimeter edge of the lens 244. Conversely, once configured in the hood mode, the inventive system can be changed to a full facepiece respirator by simply removing the hood. Alternatively, the hood may be replaced by a different hood or a full body respiratory suit 260 (Figure 10).

2. Second paragraph on page 10:

In addition to the coupling frame 245 used to sealably couple an interchangeable face shield component and a body seal as shown in FIG. 6, other fastening devices such as a bracket, a band 256 (FIG. 8), a clamp or a latch 258 (FIG. 9) may be used. Furthermore, various fasteners such as those which employ microstructured sealing mechanisms can be used for the same purpose. These fasteners can be used to seal two opposite surfaces together without the assistance of a separate mechanical fastening

device. Among these fasteners are the well known hook-and-loop type fasteners, and mushroom-type hook strips disclosed in U.S. Patent No. 5,077,870 to Melbye et al. Frictional engagement and/or sealing characteristics between opposed rim portions on cooperative sealing components may also be enhanced by forming one or more of the opposed surfaces with microstructured surface features 254 such as disclosed in U.S. Patent No. 5,508,084 to Reeves et al., or any other equivalences known in the art.

IN THE CLAIMS

15. (Amended) The hood respirator of claim 12 wherein the perimeter sealing edge of said facial lens and the lens opening have opposed rim portions and wherein the disengageable coupling is selected from the group consisting of opposed threaded members, an elastic band at least partially extending along the opposed rim portions, and a latch mechanism.
16. (Amended) The hood respirator of claim 12 wherein the perimeter sealing edge of said facial lens and the lens opening have opposed rim portions and wherein one or both of the opposed rim portions include microstructured sealing surfaces.
17. (Amended) The hood respirator of claim 12 wherein the perimeter sealing edge of said facial lens and the lens opening have opposed rim portions and wherein the opposed rim portions include cooperative mechanical engagement surfaces.
29. (Amended) A respiratory kit comprising:

a plurality of body seals comprising at least a first type of body seal and a second type of body seal, each body seal having a lens opening defined therein;

at least one facial lens, interchangeable with at least one of the plurality of body seals, having a perimeter sealing edge around the lens, the lens capable of being selectively removably coupled with each body seal along the perimeter sealing edge of the lens and the lens opening on the body seal wherein, when so coupled, a seal is defined between the body seal and the lens; and

a breathable gas delivery conduit capable of being fluidly coupled to each of the body seals or the lens.

38. (Amended) A respiratory kit comprising:

at least one respirator hood, with each hood having a mask opening defined therein;

at least one respirator mask, interchangeable with at least one of the at least one respirator hood, having a facial lens, a full facepiece seal coupled with the lens, and a perimeter sealing edge around the mask, wherein the mask is capable of being selectively removably coupled with each hood along the perimeter sealing edge of the mask and the mask opening on the hood wherein, when so coupled, the hood is superpositioned over the full facepiece seal and a seal is defined between the hood and the mask; and

a breathable gas delivery conduit capable of being fluidly coupled to the mask or the hood.